

the reference dot detection section 14A detects a reference dot from the binarized code information. As the reference dot to be described later, for example, a pattern dot 278 may be employed. The dot area measuring section 14B measures the area of the reference dot detected by a reference dot detection section 14A. The threshold value modifying section 14C modifies the threshold value for use in the binarizing process in such a manner that the area measured by the dot area measuring section 14B approaches a predetermined target value. The threshold value determining section 14D binarizes the image signal with the threshold value modified by the threshold value modifying section 14C, and then transmits the obtained binarized data to the information reproducing section 16.--

Please amend claims 1-3, 5, 7-13, 16, 19-22 and 24, and add claims 25-29, as follows:

1. (Amended) An information reproducing system comprising:  
code reading means for reading a [desired] dot code from an  
information recording medium on which multimedia information  
including at least any one of audio information, image  
information and digital code data has been recorded in the form  
of a dot code which can optically be read, to provide an image  
signal corresponding to an image formed from said dot code that  
has been read;

binarizing means for generating binarized data from [an]  
10    said image signal [corresponding to the dot code read by said  
code reading means]; and

information reproducing means for restoring said binarized  
data generated by said binarizing means to [original] the  
multimedia information [to reproduce] and for reproducing the  
15    multimedia information, wherein

    said binarizing means includes:

    reference dot detection means [which binarizes the image  
signal with a predetermined threshold value prior to generating  
binarized data so as to detect] for detecting a reference dot  
20    from [the] said binarized [code image] data by use of a  
predetermined threshold value;

    dot area measuring means for measuring [the] an area of the  
reference dot detected by said reference dot detection means; and

    threshold value modifying means for [modifying the]  
obtaining a modified threshold value derived in such a manner  
25    that the area measured by said dot area measuring means  
approaches a predetermined target value[;and].

    [threshold value determining means for binarizing the image  
signal with the threshold value modified by said threshold value  
30    modifying means.]

wherein said binarizing means generates said binarized data  
from said image signal based on said modified threshold value.

2. (Amended) An information reproducing system according to claim 1, wherein said binarizing means binarizes the image signal formed from said dot code that has been read by said code reading means in [one of field and frame] units of one field or units of one frame.

3. (Amended) An information reproducing system according to claim 1, wherein

said code reading means successively reads [the code image] said dot code, and

*AK*  
said binarizing means [modifies the threshold value of the successive image signals read by said reading means in one of the previous field and previous frame in accordance with the area of the detected reference dot so as to binarize the one of the present field and present frame with] detects, with said reference dot detection means, the reference dot from binarized data generated from a particular image signal corresponding to an image formed from said dot code of an immediately preceding field or frame, said particular image signal having been binarized based on said predetermined threshold value, and wherein said binarizing means further measures the area of said reference dot to obtain an area measurement, modifies the predetermined threshold value, with said threshold value modifying means, based

*Ar*  
*c*  
*A3*

on said area measurement, to derive said modified threshold value, and binarizes a current field or frame based on the modified threshold value.

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5. (Amended) An information reproducing system according to claim 1, wherein the dot code recorded on said information recording medium includes a data code corresponding to the multimedia information and a pattern code for determining the position at which the data code is read, and

the reference dot is at least a portion of the pattern code.

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7. (Amended) An information reproducing system according to claim 1, wherein

said reference dot detection means detects a plurality of said reference dots; and

said dot area measuring means has average area calculating means for calculating [the] an average area from areas of the detected [plural] plurality of said reference dots.

8. (Amended) An information reproducing system according to claim 7, wherein

said dot area measuring means has dot selection means for inhibiting input of the area of the reference dot into said average area calculating means in a case where the measured area

of each reference dot is [larger than] outside of a predetermined range.

9. (Amended) An information reproducing system according to claim 1, wherein

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said threshold value modifying means has threshold value holding means for (i) counting the number of reference dots detected by said reference dot detection means, [determines] (ii) determining whether or not the counted number of the reference dots satisfies a predetermined number and [inhibits] (iii) inhibiting modification of the threshold value in a case where the counted number of reference dots is less than the predetermined number.

10. (Amended) An information reproducing system according to claim 1, wherein

said threshold value modifying means includes;  
peak value detection means for detecting [the] a maximum value and [the] a minimum value of [the] a luminance from a [predetermined] detection region defined on the image formed from the dot code read by said code reading means;

interior division ratio modifying means for modifying [the] an interior division ratio in accordance with [the] an amount of modification of the interior division ratio calculated from [the] a difference between the area measured by said dot area measuring

means and the predetermined target value; and

threshold value calculating means [which divides the value] for multiplying a difference between the maximum and minimum values detected by said peak value detection means with the interior division ratio modified by said interior division ratio modifying means and adding the minimum value so as to [calculate the] obtain said modified threshold value.

11. (Amended) An information reproducing system according to claim 10, wherein said peak value detection means [interrupts following processes for] terminates subsequent processing of the image signal for a [subject] current frame in one of a case where the detected minimum value is larger than a predetermined first threshold value and a case where the detected maximum value is smaller than a predetermined second threshold value.

12. (Amended) An information reproducing system according to claim 10, wherein said peak value detection means has selective average calculating means for calculating [the] an absolute value of [the] a difference between luminance values of pixels that are positioned adjacent to a pixel of interest and for calculating [the] an average value of the luminance values of adjacent pixels only when [a result of the calculation] said absolute value is smaller than a predetermined threshold value

10 [so that], wherein said peak value detection means thereby  
detects the peak values [are detected] from the  
calculated average value of the [calculated] luminance values.

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13. (Amended) An information reproducing system according  
to claim 10, wherein said interior division ratio modifying means  
has an interior division ratio modification amount table for  
determining [the] an amount of modification of the interior  
division ratio in accordance with [the] a relationship between  
dot area S and target value  $S_t$  [so as to determine] and  
determines an amount  $\Delta k$  of modification of the interior division  
ratio from the measured dot area and the predetermined target  
value in accordance with said interior division ratio  
modification amount table.

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16. (Amended) An information reproducing system according  
to claim 10, wherein said interior division ratio modifying means  
changes the interior division ratio in a stepped manner and  
[provides] allows an interior division ratio modifying operation  
to have a hysteresis characteristic.

30 19. (Amended) An information reproducing system according  
to claim 10, wherein

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said code reading means successively reads [the code images]  
said dot code,

35        said interior division ratio modifying means modifies the  
interior division ratio to one of a field and a frame which  
satisfies a predetermined condition for the successive image  
signals formed from said dot code read by said code reading means  
and holds the modified interior division ratio for one of the  
following field and frame.

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20. (Amended) An information reproducing system according  
to claim 1, wherein

A 6  
D 0  
46 00  
00 00  
P 00  
G 00  
N 00  
S 00  
E 00  
B 00  
50 00  
C 00  
P 00  
said  
the dot code recorded on said information recording medium  
has an attitude dot disposed in a predetermined [region] area  
adjacent to [the] a reading start end and including information  
about said information recording medium for determining the  
threshold value required by said binarizing means, and

said binarizing means includes:

attitude dot detection means for detecting the attitude dot;

attitude reading means [which binarizes the image signals  
read by said reading means in one of field and frame units so as  
to read] for reading information relating said information  
recording medium from the attitude dot [of said binarized image]  
detected by said attitude dot detection means in the image signal  
55 formed from the dot code read by said code reading means and  
binarized based on the threshold value determined in accordance  
with said attitude dot; and

attitude storage means for storing information read by said

attitude reading means and applying information to each of  
60 following images.

5581> 21. (Amended) An information recording medium for use in an  
information reproducing system having code reading means for  
reading a [desired] dot code from an information recording medium  
65 on which multimedia information including at least any one of  
audio information, image information and digital code data has  
been recorded in the form of a dot code which can optically be  
read; binarizing means for generating binarized data from an  
image signal corresponding to the dot code read by said code  
reading means; and information reproducing means for restoring  
binarized data generated by said binarizing means to original  
multimedia information to reproduce multimedia information, said  
information recording medium comprising:

data dots which correspond to [the] contents of  
the multimedia information and which can optically be read; and  
a reference dot arranged to be [detected] binarized by said  
binarizing means and serving as a reference when the threshold  
value is modified to allow the area of the [detected] binarized  
dot to approach a predetermined target value.

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22. (Amended) An information recording medium according to  
claim 21, wherein a plurality of the reference dots are recorded  
[in an image pickup region] on the information recording medium

*85*  
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in such a manner that said plurality of the reference dots can be  
detected in an image pickup area of the code reading means when  
the code reading means reads the dot code from the image pickup  
area.

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24. (Amended) An information recording apparatus for  
recording multimedia information including at least any one of  
audio information, image information and digital code data in the  
form of a dot code which can optically be read, comprising:

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input means for inputting information relating to said  
information recording medium;

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*99*  
*100*

storage means for storing [the] a predetermined relationship  
between the information relating to [a predetermined] the  
information recording medium and one of [the] an area of the dot  
[when data is recorded] and [the] a recording density when data  
is recorded; and

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recording means for reading a corresponding one of the dot  
area and the recording density from said storage means in  
accordance with the information that relates to said information  
recording medium and which has been input by said input means  
[and relating to said information recording medium so as] to  
thereby record a dot code corresponding to multimedia information  
in accordance with the one of the dot area and the recording  
density.

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25. An information reproducing system according to claim 1, wherein

said code reading means successively reads said dot code,  
and

5       said binarizing means detects, with said reference dot  
detection means, the reference dot from binarized data generated  
from a particular image signal corresponding to an image formed  
from said dot code of a current field or frame, said particular  
image signal having been binarized based on said predetermined  
threshold value, and wherein said binarizing means further  
measures the area of said reference dot to obtain an area  
measurement, modifies the predetermined threshold value, with  
said threshold value modifying means, based on said area  
measurement, to derive said modified threshold value, and  
binarizes the current field or frame based on the modified  
threshold value.

26. An information reproducing system comprising:  
code reading means for reading a dot code from an  
information recording medium on which multimedia information  
including at least any one of audio information, image  
information and digital code data has been recorded in the form  
of a dot code which can optically be read, to provide an image  
signal corresponding to an image formed from said dot code that

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has been read;

binarizing means for generating binarized data from said image signal by use of a threshold value; and

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information reproducing means for restoring said binarized data generated by said binarizing means to the multimedia

information and for reproducing the multimedia information;

wherein said binarizing means modifies the threshold value based on a measurement of an area of a predetermined dot obtained from the binarized data generated from said image signal.

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27. An information recording medium for use in an information reproducing system comprising:

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code reading means for reading a dot code from an information recording medium on which multimedia information including at least any one of audio information, image information and digital code data has been recorded in the form of a dot code which can optically be read;

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binarizing means for generating binarized data, by use of a predetermined threshold value, from an image signal corresponding to an image of the dot code read by said code reading means; and

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information reproducing means for restoring binarized data generated by said binarizing means to the multimedia information and for reproducing the multimedia information, said information recording medium comprising:

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data dots which correspond to contents of